Johannes J. Britz

The joy of sharing knowledge: But what if there is no knowledge to share? A critical reflection on human capacity building in Africa[1]

Abstract:

This article focuses on the current trends and initiatives in human capacity building in Africa. It takes as it starting point that human capacity development is essential for Africa to become an information and knowledge society and therefore an equal partner in the global sharing of knowledge. Four knowledge areas are identified and discussed. These are education, research and development, brain drain and information and documentation drain. The paper concludes that there is a clear understanding in Africa that its future lies with education and that most African leaders have a strong political will to invest in human capacity building on the continent. It is also clear that much has been done, particularly primary education. Africa will most definitely benefit from this in the long run. Problem areas remain however. These are in the needed growth of research and development and how to address the brain and information drain phenomena.

Agenda

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[1] Part of this research is based on a doctoral thesis by the author (2006).

From Karlsruhe to Pretoria: The eye of the (knowledge) hippo

In October 2004 an international symposium on Information Ethics was held in Karlsruhe Germany. It was organized by the International Center for Information Ethics and sponsored by the Volkswagen Foundation in Germany. Leading international experts in the field of information ethics were invited to participate and it was a first of its kind in the world. The symposium focused on the new and challenging ethical question raised by modern information and communication technologies within the paradigm of globalization and knowledge economies. Themes discussed included issues such as privacy, access to information, intellectual property rights, quality of information, security, spamming, advanced capitalism and the digital divide which included the question of the information rich versus the information poor. (ICIE)[2]

It became clear to all present that the African continent was not well represented at the symposium. There were only a few Africans in attendance, most of them expatriates. There were of course many reasons why the African scholars were not present. Some relate to the mere fact that they are unknown to other international scholars. Lack of funding to attend international events is also a stumbling block, and last but not least, not much research has been done on the African continent on this very important topic. It seems, in terms of scholarly publications, that African scholars did not have much to offer to their global counter parts on the ethical challenges facing Africa in the era of globalization. Rafael Capurro did a search on publications related to African Information Ethics by African scholars and came across a limited number of publications (Africainfoethics.org)[3].

There is therefore an urgent need to integrate leading African scholars into the international ethics debate on the impact of new information and communication technologies in Africa. This led to the organization of the first ever Africa Information Ethics conference which was held in February 2007.

The event took place in Pretoria (South Africa) and was attended by scholars from more that 21 countries, most of them from Africa. The theme of the conference was very appropriate: "The joy of sharing knowledge".

This lack of contribution by African scholars to the debate on information ethics presents, figuratively speaking, only the eye of the hippo, as it is symptomatic of a larger 'knowledge problem' facing the African continent.

To a large degree, as I will argue in the rest of this paper, Africa is knowledge poor since most of its knowledge wealth is still imbedded in its people. It is not made explicit and it is not shared with the rest of the world. The following two examples will illustrate this point: Only 1% of the global scholarly publications originate from Africa – most of these are from South Africa. Also, roughly 60% of all adults living in Africa are still illiterate. This makes Africa, in terms of its own development, vulnerable and dependent, and according to the African Union, Africa still lacks in many respects the intellectual capacity to address its own problems in a scientific manner (Commission for Africa Report, 2005)[4]. Related to this question is the mere fact that if Africa does not invest more in education and specifically in relevant research and development (R&D) activities, this continent will not only fall further economically behind, but will also run the risk of being excluded from the global innovation networks. Nearly ten years ago the rector of the United Nations University, Hans van Ginkel commented that if Africa does not invest heavily in its own knowledge sector it will remain in a dangerously dependent position (United Nations University, 1998)[5].

Human capacity building needs therefore to be a the top priority of any agenda dealing with Africa's road of becoming an information and knowledge society. It is evident that most of the political leaders on the

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[2] ICIE. International Center for Information Ethics. Website: http://icie.zkm.de/

[3] Africainfoethics.org. Website: http://www.africainfoethics.org/bibliography.html.

[4] Commission for African Report. 2005. [Online]. Available from: http://www.commissionforafrica.org/english/report/introduction.html. Accessed 19 October 2005

[5] United Nations University. (1998). United Nations University: Higher education and knowledge. [Online] Available from: http://www.unu.edu/africa/00sps-strengthen.html. Accessed October 17 2005.

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continent share this view. This explains why the Africa Union explicitly stated that one of its highest priorities is to make Africa part of the global information and knowledge society (NEPAD, Three Years of Progress, 2004)[6].

The obvious reason being that knowledge forms the cornerstone of an information and knowledge society. Not only the use thereof, but more so the ability to produce and export it. Knowledge is the main facilitator of growth and economic development that allows people living on the African continent to reach their full potential and to achieve their human well – being.

Even though there is no lack of political will in Africa the question still remains: How much does Africa invest in its people not only to ensure growth and prosperity, but also to be able to become an equal partner in the sharing of the global body of knowledge?

From primary education to research and development: The size of (knowledge) hippo in Africa

In the rest of this paper I will try to answer the question. I will build my argument around the different 'knowledge initiatives' on the continent that are focused on addressing the challenges associated with human capacity building.   My focus areas include the following:

- education;
- research & development (R&D);
- brain drain and
- information and document drain.

Education

Sheer numbers and statistics make a compelling argument that some African countries are making good and steady progress towards primary and secondary educational sectors. I highlight two relevant statistics in support of this argument:

Based on an analysis of the OECD countries (African Economic Outlook 2006)[7] more that 90% of primary school children are actually attending school in Africa.

In comparison to most develop countries a number of African countries, for example South Africa, Kenya and Lesotho, allocate more or less the same percentage of its GDP towards education (see table 1). A number of African countries, including Zambia and Mozambique, still fall far behind in terms of allocation of money to primary education. It is also important to bear in mind that although the percentage allocated to education might be equivalent to developed nations, the dollar amount is significantly lower.

COUNTRY	POPULATION	% GDP for education	TOTAL GDP
Ivory Coast	17 mil	4.6%	$ 13.7 bn
Kenya	34 mil	6.2%	$ 14.4 bn
South Africa	45 mil	5.7%	$159.9 bn
Lesotho	1.8 mil	10%	$ 1.362 bn
Namibia	2.03 mil	7.9%	$15,14 bn
Mozambique	19.4 mil	2.4%	$6.43 bn
Zambia	11.2 mil	1.9%	$ 5.351

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[6] NEPAD 2004. NEPAD: three years of progress. [Online].   Available   from: http://www.sarpn.org.za/documents/d0000982/P1091-NEPAD_3Years_Oct2004.ppt#256,1,NEPAD. Accessed 24 July 2005.

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[7] African Economic Outlook. 2006. OECD Publication. Paris: African Development Bank.

			bn
Botswana	1.6 mil	2.1%	$18.72 bn
Tanzania	36.5 mil	2.1%	$12.12 bn
Niger	14 mil	2.3%	$3.43 bn

COUNTRY	POPULATION	% GDP for Education	TOTAL DGP
USA	300 mil	5.7%	$10 949 bn
United kingdom	60 mil	4.8%	$1795 bn
Australia	8 mil	4.8%	$522 bn
Finland	5 mil	6.3%	$161.9 bn
Ukraine	48,5 mil	4.2%	$49.5 bn
Korea	48 mil	4.9%	$605.3 bn

Table 1: comparative statistics on allocation of GDP towards education

http://www3.nationalgeographic.com/places/continents/continent_africa.html

These statistics are supported by a strong political will in Africa to invest in its people and in education. It is important to quote Thabo Mbeki, the current president of South Africa, which is the most powerful nation in Africa.

"If the next century is going to be characterized as a truly African century, for social and economic progress of the African people, the century of durable peace and sustained development in Africa, then the success of this project is dependent on the success of our education systems. For nowhere in the world has development been attained without universal and sound primary education, without an effective higher education and research sector, without equality of educational opportunity" (Mbeki, in Butcher, 2003:11)[8].

This quote is taken from his opening address at the Conference on Education for African Renaissance in the Twenty First Century. Much of this sentiment is reflected in the priorities set by the New Partnership for Africa's development (NEPAD) in 2005. NEPAD is a vision and strategic framework for Africa's renewal. The NEPAD strategic framework document were developed from a mandate given to the five initiating Heads of State (Algeria, Egypt, Nigeria, Senegal, South Africa) by the African Union to develop an integrated socio-economic development framework for Africa[9]. Human development, and in particular education, is set as one of the top 10 priorities of NEPAD (NEPAD, Three years of progress, 2005)[10]. As part of the Human Capacity Development strategy NEPAD has also launched an e-school initiative focusing on teaching school children as well as teachers ICT skills (Commission for Africa Report, 2005)[11]. Some African countries also put their money where their mouth is and made

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[8] Butcher, N. 2003. Technological inforastructure and use of ICT in education in Africa: An overiew. Working group on distance education open learning (WGDEOL). Paris: Association for the Development of Education in Africa.

[9] The New Partnership for Africa's Development (NEPAD). Website: http://www.nepad.org/2005/files/inbrief.php.

[10] NEPAD 2004. NEPAD: three years of progress. [Online]. Available from: http://www.sarpn.org.za/documents/d0000982/P1091-NEPAD_3Years_Oct2004.ppt#256,1,NEPAD. Accessed 24 July 2005.

[11] Commission for African Report. 2005. [Online]. Available from: http://www.commissionforafrica.org/english/report/introduction.html. Accessed 19 October 2005

remarkable progress in primary education. I list three examples:

Mozambique succeeded to double the number of school enrolment over a period of 5 years (2000 – 2005);

Zambia is currently revisiting the current policy of free education up to grade 7 and to introduce free education up to grade 12;

Kenya introduced free primary education, successfully bringing back 1.2 mil children to school and

Tanzania build more than a 1000 new schools over the past couple of years and in addition 18 000 new teachers that have been recruited (G8 Gleneagles, 2005)[12].

Africa also faces some steep educational challenges. Many African countries simply lack resources to adequately address their educational needs According to the NEPAD Secretariat weekly newsletter (8 September 2005) there are more than 40 million children in Africa not in school and have never been exposed to any formal education. There is an estimated shortage of 3 million teachers on the continent. Furthermore Africa is the continent with the lowest average school completion rate – it is on average 60% or less and Africa has also the highest number of girls not attending school (23 million). Another example to illustrate the education crises in Africa is the fact that in the year 2000 Nigeria (the most populous country in Africa and one of the richest in terms of natural resources) had only the capacity to accommodate 12% of qualified candidates for higher education (Commission for Africa Report, 2005; World Economic Forum, 2003)[13]. Another drawback is the low level of literacy (Britz, et al.: 2006)[14]. In the 2005 the average illiteracy rate on the African continent was 35%. One sign of hope is the fact that the average illiteracy rate of people between the ages of 15 and 24 is substantially lower at 20% (African Economic Outlook, 2006:581)[15].

Research and Development

Although Africa is still facing some serious educational challenges. One can argue that substantial progress is being made, particularly regarding primary education. Investing in children's education ensures that the next generation will be able to effectively generate and utilize knowledge that will foster economic growth and development. This leads me to the next important question: Who are the people in Africa that are actively involved in research and knowledge generation? In other words: what is the current status of R&D in Africa, and who are the knowledge creators on the continent and to what extent is Africa able to address and solve its problems by means of locally created knowledge?

It is clear that most African countries value R&D and understand that is it crucial to any economic development. According to a recent study by the Commission for Africa there are some excellent R&D facilities in Africa. Examples included the South African Council for Scientific and Industrial Research, the African Economics Research Consortium, the Bio Sciences Facility for Central and Eastern Africa as well as the Community and Individual Development Association (CIDA) City Campus in South Africa (Commission for Africa Report, 2005:138)[16]. Under the leadership of NEPAD the number of Academic of Sciences in Sub-Saharan

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12 G8 Gleneagles. 2005. Policy issues. Africa. [Online]. Available from: http://www.g8.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/Showpage&c+Page. Accessed 19 September 2005.

13 World Economic Forum. 2003. Gearing Africa for the knowledge economy: African Economic Summit (2003). [Online]. Available from: http://www.weforum.org/site/knowledgenavigator.nsf/Content/Gearing%20Africa%20. Accessed 13 October 2004

14 Britz, J. J., Lor, P. J., Coetzee, E. M. I. & Bester, B. C. 2006. Africa as a knowledge society: a reality check. International Information and Library Review, 38: 25-40.

15 African Economic Outlook. 2006. OECD Publication. Paris: African Development Bank.

16 Commission for African Report. 2005. [Online]. Available from: http://www.commissionforafrica.org/english/report/introduction.html. Accessed 19 October 2005

Africa have increased to 10 (Schneegans & Amelan, 2006)[17].

African political leaders are however weary of the fact that not nearly enough money is invested in R&D activities. In 2004 NEPAD for example organized a meeting of African ministers of science. At this meeting it was agreed that Africa should increase its spending on R&D to at least 1% of GDP in the next decade. The current spending is less that 0.1% (Science and Development Network, 2004)[18]. This will compare, at least in terms of percentage, more favourably to the European Union's 1,93% of the GDP. Japan and the USA invest more that 2% of its GDP on R&D. This call for African countries to increase their spending on R&D to at least 1% of the GDP by 2010 was reiterated in 2007 at the meeting of the African ministers of Science and Technology (IISD report, 2007).

Alarming however is the fact that nearly 60% of all R&D activities in Africa are centered in South Africa and according to the Commission for Africa Report there is in the greater Congo basin virtually "no science at all" (Commission for Africa Report, 2005: 138)[19].

African political leaders also realized that there is a lack of an indigenous base for science and technology that hampers the development of Africa. This led to the establishment of the African Ministerial Council on Science and Technology (AMCOST) in November 2003 under the auspices of the New Partnership for Africa's Development (NEPAD) and the African Union (AU). AMCOST is a "...high-level platform for developing policies and setting priorities on science, technology and innovation for African development (IISD Report,

2007)[20]. The main purpose of AMCOST is to provide political and policy leadership for the implementation of Africa's Science and Technology Consolidated Plan of Action (CPA) which was decided upon in 2003. The CPA "...articulates Africa's common objectives and commitment to collective actions to develop and use science and technology for the socio-economic transformation of the continent and its integration into the world economy" (IISD Report, 2007). With this initiative it seems as if Africa is now trying to find answers from within and not relying as much on answers and solutions from abroad to address the unique problems of Africa. Finding answers from within implies also that one needs to find the researchers from within. This leads me to address the next knowledge challenge facing Africa, namely the brain drain.

The migration of the (knowledge) hippo from Africa: Brain drain

The economic reality of the brain drain in Africa hits the African governments very hard. Based on statistics, as well as initiatives to reverse this brain drain, it is clear that Africa's political leaders understand the seriousness of this condition. The migration of Africa's well educated people to the developed world is one of the major stumbling blocks for Africa to become an information and knowledge society. The alarming fact is that the monetary value of the exodus of people out of Africa exceeds the value of all the development aid that African countries have received from the developed world (Britz & Lor, 2003: 165)[21]. It is estimated by the World Bank (2002) that more that 70 000 highly qualified African scholars leave the continent on a yearly basis to work abroad (World Bank Report, 2002)[22]. Many of them never return and it is

17 Schneegans, S. & Amelan, R. 2006. The shifting fortunes of global science. A World of Science, 4(2): 2-7.

18 Science and Development Network. 2003. African nations agree on science spending targets. [Online]. Available from: http://www.scidev.net/News/index.cfm?fuseaction =readNews&itemid=1095&language=1. Accessed 19 October 2005.

19 Commission for African Report. 2005. [Online]. Available from: http://www.commissionforafrica.org/english/repor t/introduction.html. Accessed 19 October 2005

20 IISD Report. 2007. [Online] Available from: http://www.iisd.ca/africa/amcost/. http://www.iisd.ca/africa/brief/briefing0702e.html

21 Britz J. J. & Lor, P. J. 2003. A moral reflection on the flow from south to north with specific reference to the African continent. Libri, 53(3): 160-173.

22 World Bank. 2002. Globalisation, growth, and poverty: building an inclusive world economy, a co publication of the World Bank and Oxford University Press. New York: Oxford University Press.

estimated that Africa spends more that $4 billion annually to replace these lost skills (World Market Research Center, 2002)[23].

Some African countries have introduced some radical measures to retain and/or to benefit from Africans in the diaspora. I list a few of these initiatives:

Intellectual diaspora networks. More that 40 countries in Africa are part of these networks (Meyer, Kaplan & Charum: 2001)[24]. The main aim is to maximize the use of the skills and knowledge of expatriates in such a way that they can contribute to the particular country's development. This initiative is based on the idea that a pool of knowledge must be potentially available without the expatriates having to permanently return to their home countries (Brown, Kaplan & Meyer, 2001)[25].

Transfer of Knowledge through Expatriate Networks (TOTKEN). This program was initiated by the United Nations Development Program (UNDP). This program is closely related to the above mentioned initiative and the main aim is to promote the greater use of well-skilled expatriates to train Africans at home. The focus is however on short term service in economic and social development. (TOTKEN Program, 2006)[26].

South African Network of Skills Abroad (SANSA). In South Africa, a similar programme, known as the South African Network of Skills Abroad, has also been initiated. The basic idea is to encourage expatriate South Africans to make their body of knowledge and skills available to continue contributing to South Africa's development without having to return permanently to South Africa (S.A. National Research Foundation, 2002)[27]. According to the South African National Research Foundation contributions can include the activities such as the participating of South African scholars in training or research with South African counterparts abroad; the transmitting of knowledge and information and results of research which are not locally available as well as the facilitation of business contacts abroad (SANSA, 2006)[28].

Another initiative to change the threat of brain drain into an opportunity is the "Renewing the African University" project. African universities, in association with the Association of African Universities and the Association of Commonwealth Universities played a leading role in initiating this project and the main aim is to enhance higher education in Africa. Renewing the African University is a ten-year partnership programme and the cost is estimated at $500 million per annum. The G8 Commission on Africa Report strongly recommends that the international community support this initiative (Renewing the African University, 2005, Commission for Africa Report, 2005:138)[29].

These initiatives by Africans and others abroad to not only counter the brain drain, but also to change this threat into an opportunity must certainly be applauded. However, the successes of these initiatives are not yet determined and very little data is available reflecting the achievements (success or failure) of these projects. The Renewing the African Universities project is also very ambitious and costly and it is uncertain where the necessary funding will come from to ensure the success thereof.

23 World Markets Research Centre. 2002. The brain drain: Africa's Achilles heel. [Online]. Available from: http://www.worldmarketanalysis.com/InFocus2002/article/africa_braindrain.html. Accessed 9 July 2005.

24 Meyer, J. B., Kaplan, D., & Charum, J. 2001. Scientific nomadism and the new geopolitics of knowledge. International Social Science Journal (168): 309-321.

25 Brown, M., Kaplan, D. & Meyer, J. B. 2001. Counting brains: measuring emigration from South Africa, Southern African Migration Project. Kingston, Ontario: Queen's University.

26 TOTKEN Program, 2006. [Online]. Available from: http://www.tokten.org/index.cfm. Accessed 1 September 2006.

27 S. A. National Research Foundation. 2002. SANSA: South African network of skills abroad. [Online]. Available from: http://sansa.nrf.ac.za/interface/AboutSANSA.htm. Accessed 1 September 2002.

28 SANSA South African Network of Skills Abroad. 2006. [Online]. Available from: http://sansa.nrf.ac.za/Default.aspx?Instruction=AboutSANSA. Accessed 1 September 2006.

29 Renewing the African University. 2005. [Online]. Available from: http://www.aau.org/gc11/adocs/pdf/eng/aau-acu-sauvcaprog.pdf. Accessed 13 October 2004.

The starving of the (knowledge) hippo in Africa: Information and documentation drain

Another contributing factor to Africa's inability to share in the joy of sharing knowledge relates to the international trade in information and documentation. By information and documentation trade I specifically refer to the international flow of scientific and scholarly publications. It is a well known fact that only a small proportion of the world's scholarly and scientific literature published in high-ranking journals and indexed in key research tools originate from developing nations. Africa, for example, is responsible for the publication of only 1% of the world's scholarly publications (Britz & Lor, 2003; Gibbs, 1995[30] and de Koker, 1995[31]).

A contributing factor to this lack of publications is the fact that the majority of African scholars and scientists are facing obstacles when they wish to contribute to the international body of scientific and scholarly knowledge. Based on the finding of a previous article that I published with Peter Lor (2003) I summarize a number of these barriers.

Scientific research that is done in African countries is sometimes viewed as of lesser quality or inferior. Apart from prejudice, it is unfortunately also true that some of the research undertaken by African scholars is indeed of poor quality. A number of factors contributing to this state of affairs include poor training/education and/or a lack of equipment and an inability to command English and/or French. Much of the research done in Africa therefore end up being published in the grey literature and can, due to poor bibliographic control amongst other factors, remain inaccessible to the global scientific community. What aggravates this problem even further is the fact that the number of academic journals in Africa is declining, and academic libraries around the world are reluctant to subscribe to these journals because of the fact that they are poorly managed (Rosenberg, 2002:51, 54, 55)[32]. Most of these journals are also not indexed in the major indexing databases. This has furthermore led to the perception that these journals are not up to standard and that the content is of a lower quality.

The fact that local journals from Africa are not always well managed and in many cases not indexed in the prestigious international indexing and abstracting databases led to an inclination by many African authors not to publish in their local journals (Britz & Lor, 2003:164)[33]. This trend poses furthermore a serious threat to the survival of African based journals. Many scholars and scientists from Africa furthermore choose to publish in high ranking international journals because it is more advantageous to their own professional development and careers (Fernandez,1999:23[34]; Cao and Suttmeier ,2001:968[35]).

The inadequate flow of scientific literature from the developed world to Africa makes it also difficult for researchers in Africa to gain access to the cutting edge of research in their respective fields. One of the main reasons for this inadequate flow is high costs. Access to high-quality scientific journals is very expensive and most research libraries in Africa cannot afford to subscribe to these journals.

These factors have led to asymmetric power relationships. For many African scholars and researchers to access and use their own scholarly and scientific knowledge they need to access the international indexing and abstracting services. These services are mostly situated in the developed countries thereby making scholars residing in African countries dependent on these countries to access their own scientific knowledge.

[30] Gibbs, W. W. 1995. Lost science in the Third World. Scientific American, 272(2): 92-99.

31 De Koker, B. 1995. August editing science. Scientific American, 272(2): 95-96.

[32] Renewing the African University. 2005. [Online]. Available from: http://www.aau.org/gc11/adocs/pdf/eng/aau-acu-sauvcaprog.pdf. Accessed 13 October 2004.

33 Britz J. J. & Lor, P. J. 2003. A moral reflection on the flow from south to north with specific reference to the African continent. Libri, 53(3): 160-173.

[34] Fernandez, L. 1999. Scholarly communication in the science: a Third World perspective. Internet Reference Service Quarterly, 4(4): 19-27.

[35] Cao, C. & Suttmeier, R. P. 2001. China's new scientific elite: distinguished young scientists, the research environment and hopes for Chinese science. China Quarterly, 960-984.

Closely related to the above mentioned issue is what Peter Limb referred to as the so-called document drain (Limb, 2002:52[36]). Document drain refers to the initiatives by some major research libraries in the developed world (mostly the West) to purchase materials published in Africa and other parts of the developing world. These well resourced libraries include the Library of Congress; the Melville J Herskovits Library of African Studies, Northwestern University, Evanston, Illinois; the Centre for African Studies Library at Leiden University, the Netherlands; and the School of Oriental and African Studies Library, University of London, England (Britz & Lor, 2003)[37]. The implication of this trend is again clear: Scholars from Africa and other developing countries will find more comprehensive and better preserved collections of their own body of knowledge in these libraries than in their own countries.

Africans and also the larger international research community are aware of the scale of this problem and some initiatives have been to make scientific and scholarly research more accessible to African researchers. I will discuss two of these initiatives. The first relates to a local African initiative and the other is an international effort to make health care information more accessible.

The local African initiative is the African Journals Online Project (AJOL). It was launched in 1998 as an effort to make Africa's own body of scientific and scholarly knowledge more accessible to, not only Africans, but also the rest of the world. As a service AJOL displays the tables of contents of African journals and provides an article delivery service to scholars. This is done free of charge for African scholars. The project is run on Open Source software, is now managed from South Africa in partnership with National Inquiry Service Center (NISC). It covers currently over 220 titles. The NISC also launched the NiPAD database that provides access to more that 2 million African records in 40 databases, some with full text links (NISC, 2006)[38].

The international project aiming to make research on healthcare more accessible to African scholars is the Health InterNetwork Access to Research Initiative (HINARI).

HINARI is an initiative of the World Health Organisation (WHO). Its main focus is on the distribution of health information to developing countries, in particular Africa. As a service it provides free or highly subsidised access to major journals in biomedicine and related fields to non-profit organisations such as universities, medical libraries, hospitals, and government offices in developing countries that meet eligibility criteria based on per capita gross domestic product (GDP) (HINARI, 2005). African countries such as Ethiopia and the Sudan are eligible for free access but South Africa, as a richer nation based pays a fee based on GDP (Aronson, 2003[39]).

Six major international journal publishers joined HINARI in 2001. These were Blackwell, Elsevier Science, John Wiley, Springer Verlag, Wolters Kluwer International Health Science and Harcourt Worldwide STM Group. More publishers joined during the last couple of years and the current number stands at 70. The total number of titles available currently exceeds 2000 and includes some full text articles.

Conclusion

In this paper I looked into the current status of the knowledge sector in Africa. I asked the question, "To what extent is Africa able to become an information and knowledge society to thereby being an equal partner in the sharing of global knowledge?" I focused particularly on four knowledge categories namely education, research and development, brain drain and information and documentation drain. In my analysis I came to the following broad conclusions:

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[36] Limb, P. 2002. Ethical issues in southern African archives and libraries. Innovation: Appropriate Librarianship and Information Work in Southern Africa, 24: 51-57.

[37] Britz J. J. & Lor, P. J. 2003. A moral reflection on the flow from south to north with specific reference to the African continent. Libri, 53(3): 160-173.

38 National Inquiry Service Centre (NISC). 2006. Africa wide: NiPAD. [Online]. Available from: http://www.nisc.co.za. Accessed August 31 2006.

[39] Aronson, B. 2003. Improving online access to medical information for low income countries. New England Journal of Medicine, 350(10): 966-968.

There is a clear understanding in Africa that its future lies with education;

Most African leaders have a strong political will to invest in human capacity building on the continent;

Much has been done, particularly with primary education, and African will most definitely benefit from these efforts in the long run;

There seems to be very few short or medium term solutions that will successfully address the lack of local R&D activities in Africa;

Brain drain is a reality. It must be accepted and the current initiatives to reach out to Africans in diaspora must be supported to ensure success;

The information and document drain can be partially turned around if enough resources are made available and if the distribution cost of information products and serves can be substantially reduced.

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Britz, J. J., Lor, P. J., Coetzee, E. M. I. & Bester, B. C. 2006. Africa as a knowledge society: a reality check. International Information and Library Review, 38: 25-40.

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Butcher, N. 2003. Technological inforastructure and use of ICT in education in Africa: An overiew. Working group on distance education open learning (WGDEOL). Paris: Association for the Development of Education in Africa.

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Commission for African Report. 2005. [Online]. Available from: http://www.commissionforafrica.org/english/report/introduction.html. Accessed 19 October 2005

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